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60. *FRULLANIA NISQUALLENSIS* Sulliv.

(D) On trees, shrubs, etc. not abundant, Hamilton, Wash., March 11-20, 1904. (J 26) On trees, Oregon, Aug. 20 1905. (497 in part) Bark of young spruce, bluffs below Cathlamet, Wash., Sept. 23, 1906. (515) On bark of tree trunks, chunks, sometimes on rocky face of wall, Cathlamet, Wash., abundant, Jan. 20, 1907. (410) On live hemlock, hills back of Rainier, Oregon, May 16, 1906. (806) Alders back of Wishkah River near Aberdeen, Wash., Nov. 10, 1908. Another specimen, same locality, March 13, 1909.

Anthocerotaceae.

61. *ANTHOCEROS PEARSONI* M. A. Howe

(407) On *Pinus contorta*, Clatsop Beach, Seaside, Oregon, Aug. 19, 1905.

62. *ANTHOCEROS PUNCTATUS* L.

On soil in Cañon, Balch Creek Road, Portland, Oregon, July 3, 1905. Det. A. S. Foster.

63. *ANTHOCEROS FUSIFORMIS* Aust.

Clay soil cuts, Carson Heights, Portland, Oregon, June, 1906. Det. Miss Clark, Highlands, New Jersey.

LICHEN NOTES No. 11.

Describing *Parmelia endoxantha*, a new species; *Parmelia olivacea multisporum*, a new combination; and three little known *Parmelia* species hitherto inadequately diagnosed.

G. K. MERRILL.

PARMELIA SULFURATA Nees et Flot. in *Linnaea*, 1834 p. 501.

Reaction K_+^+ fulvescent, C_-^- but faintly.

Thallus glaucescent, ashy-white or whitish, expanded, orbicular, loosely appressed, lobed, divisions irregularly developing with more or less recurved ascendant borders, peripherally the lobes rather more depressed and broader, with the margins entire or crenate; destitute of cilia, centrally thinly isidiose, rarely subglobose sorediate marginally; above somewhat shining or nearly opaque, and here and there complicate-rugulose; within yellow or whitish-sulphureous; below black and interruptedly short-rhizinoe centrally, but broadly glabrous or yellowish-brown at the circumference. Apothecia cup-shaped, pedicellate, medium, disk yellowish-red, the margin faintly erose-crenulate. Spores $20-26 \times 9-12\mu$

On trunks of forest trees.

Examined from Tampico, Mexico, C. G. Pringle, and Island of Jamaica, Miss C. E. Cummings. Variouslly reported from our Southern States and the West Indian Islands. The species somewhat resembles *P. cristifera* Tayl. and *P. corralloidea* (Mey & Flot.) Wain., and in its sorediate conditions is sufficiently like *P. perlata* of Tuckerman's conception to be readily

mistaken for that plant. The lobes are broader than in the other *Parmelia* species with a colored medulla. *P. immiscens* Nyl. Flora, 1885, p. 606, is somewhat similar to the present. The medulla is yellow or sometimes white, apothecia crowded, spores small, and the reaction is distinctly K^+ for the medulla.

P. PERSULFURATA Nyl. in Flora, 1885, p. 606.

Reaction K^+ , C^- .

Thallus ochroleucous, greenish or yellowish-green, somewhat expanded in old plants, loosely attached, irregularly orbicular, membranaceous-cartilaginous, lobate, the lobes moderately divided, axils acute, and of medium width, irregularly radiant, contiguous and subimbricate, confusedly plicate and sometimes subcoalescent centrally, where also more or less exasperate-lobulate, borders of the major divisions crenate, decurved or sub-ascendant, but appressed and plane at the tips, the lobuli both ascendant and depressed with the margins rather incised-crenate, sparsely sub sorediate on the borders of the lobes, the margins somewhat isidiose, likewise the surface of the thallus sparingly, and the margins of the lobuli copiously; above opaque and interruptedly rugulose; within distinctly sulfureous; below exactly as in *P. sulfurata*. Apothecia not seen.

On trunks in tropical forest.

Examined from Sanford, Florida, S. Rapp. Reported from Louisiana, Mexico and Cuba.

Crombie states that Tuckerman failed to distinguish this species from *P. sulfurata*, but the plants are absolutely unlike in color and in some other particulars as a comparison of the descriptions will show.

P. AURULENTA Tuck. Suppl. I, p. 424.

Reaction K^+ , C^+ orange.

Thallus glaucous, glaucescent or ashy-glaucous, moderate in size, orbicular, loosely attached, submembranaceous, laciniate, variably divided, the axils rounded, laciniae subimbricate, borders sinuous or crenate, tips retuse or markedly incised-crenate, in typical states displaying sub-marginally, exasperate rounded or sometimes confluent sub-isidiose soredia, but other conditions observed that are merely papillose-isidiose; above rugulose and opaque; within yellowish; below black except narrowly brownish at the margins, with concolorous rather abundant short rhizinae. Apothecia medium, short-pedicelled, cup-shaped, disk pale-chestnut or darker, with a distinctly tuberculate-crenate inflexed margin, the exciple papillose-isidiose, isidio-sorediate, or at times smooth. Spores ellipsoid $9-17 \times 4-7\mu$.

On trunks of trees and on rocks.

Examined from Ottawa, Ontario, J. Macoun; from the vicinity of Baltimore, Maryland, C. C. Plitt. Reported from various Eastern States and from Newfoundland, but apparently not found in the West.

The configuration of the laciniae, rounded axils, and black rhizinoes under surface serve to ally this species with *P. laevigata* of Europe, but its distinctness is now admitted on all hands. *P. laevigata* of Tuckerman's

Synopsis describes the European plant of that name, but the cited specimen from Louisiana as examined in his herbarium is not in accord with the description, nor is it in agreement with the beautiful and strongly differentiated tropical plant recognized by Wainio and others as *P. laevigata*. A plant of some similarity to both *P. aurulenta* and *P. laevigata* is *P. isidiocera* Nyl. Syn. p. 382. It is white within as in *P. laevigata*, is here and there isidiose particularly at the margins of the laciniae, the isidia being yellow within. The species is only known from Arctic America.

P. endoxantha Merrill sp. nov.

Reaction K_+^- faint, C_+^- orange, $K(C)_+^+$ orange.

Thallus yellowish-glaucous, moderately expanded, appressed, and somewhat adherent, irregularly orbicular, sub-membranaceous, lacinate, the laciniae confusedly imbricated, moderately divided, somewhat pinnately cleft, the axils both major and minor rounded, laciniae convex but plane at the tips, borders sinuous, incised-crenate and retuse at the tips; destitute of soredia, or cilia; above opaque, commonly smooth but sometimes rugulose, or rarely and sparsely papillose-isidiose; within pale or distinctly yellow; below brown or black and moderately provided with short concolorous rhizinae. Apothecia centrally situated, appressed, small to medium, disk plane or slightly concave, chestnut or reddish-chestnut, with a thin rather erect crenate or annulate margin. Spores ellipsoid $10-11 \times 7\mu$, 8 in each theke.

On Palmetto logs in Hammock. Sanford, Florida, S. Rapp, July, 1907.

Comparable with the European forms of *P. tiliacea* but a more robust plant than are the American representatives of that species. *P. endoxantha* is irreconcilable with what Tuckerman designated as *P. tiliacea* d. *sulfurosa*, for that form is likened to his b. *sublaevigata*, and furthermore it is said to be microphylline. *P. xanthomyela* Nyl a European species provided with a yellow medulla is comparable with *P. laevigata*, and its nearest American affinity is *P. aurulenta*. Tuckerman says of the *Parmelia* species with a yellow medulla that "It appears impossible in any large view whether of *P. sulfurata*, *P. aurulenta* or *P. tiliacea sulfurata* to assign any other than a subordinate value of the modifications in these lichens of the medullary color." Such an opinion might be assented to if the medullary color constituted the only factor of difference, but in each of the several species here described other and marked elements of diverseness help to dissociate the plants and confirm specific identity.

P. olivacea var. **multisporum** (Schneider) Merrill comb. nov.

P. multisporum Schneider. Guide, p. 254.

Reaction. Not affected by either K or C.

Thallus olivaceous or brown, small, appressed, rather adherent, orbicular when space occupied permits, submembranaceous, lobate-lacinate, moderately divided, narrowed and confusedly-imbricate centrally, usually platyphylline at the circumference, borders sinuous but crenate at the tips; typically without soredia, cilia, or isidia; above opaque or sub-shining, smooth

or rugulose; within white; below black and short rhizinose. Apothecia very numerous, small or medium, short pedicelled, disk concave, chestnut or dark brown, shining or opaque, with a concolorous slightly elevated dentate or crenate or verrucose at times inflexed margin, the exciple at length rugulose. Spores variable in number, at times only 8 in each theke, and again in the same thecium affording others with 12, 16, 22, 24, 28, 32, and according to Schneider 50 or 100 spores. The dimensions of the spores in the plants of my examination are $5.9 \times 5.7 \mu$ but Schneider records $5 \times 4 \mu$, and states that the spores are ellipsoid. Within my observations the spores are as often rounded as ellipsoid.

Examined from Cathlamet, Washington. A. S. Foster, found on *Acer circinatum* and *Crataegus* sp.; Spokane, Wash., T. A. Bonser on *Crataegus Douglasii*. Reported from Washington, Idaho and Utah.

There can be no question of the affinity of this plant with *P. olivacea* rather than with *P. taeniata* as conjectured by Schneider. *P. taeniata* is a plant of the stock of *P. (Anzia) colpodes*. Rockland, Maine.

SULLIVANT MOSS SOCIETY NOTES.

New Members.--No 194. Mr. Fred. J. Lazell, Cedar Rapids, Iowa. No. 195. Miss Margaret Flockton, Botanic Gardens, Sydney. N. S. W., Australia. No. 196. Signor Egidio Corti, 67 Corso Magenta, Milan, Italy.

Any of our members having good fruiting specimens of North American mosses which they would like to exchange for those of northern Italy, please communicate with our new member Egidio Corti, 67 Corso Magenta, Milan, Italy. He offers some one hundred species.

Note change of address for Miss Mary F. Miller, to R. F. D. 4, Washington, D. C.

OFFERINGS.

(To Society Members only. For postage.)

Mr. W. W. Calkins, Berwyn, Ill., wishes to call attention to a correction of determination for *Leskea polycarpa* Ehrh., offered by him in March, 1909. It is probably a depauperate form of *Leskea obscura* Hedw., certainly not *L. polycarpa*.

Miss Mary F. Miller, R. F. D. 4, Washington, D. C. *Peltigera aphthosa* (L.) Hoffm. Collected Cabin John, Maryland.

Mr. R. H. Howe, Jr., Thoreau Museum, Middlesex School, Concord, Mass. *Ramalina reticulata* (Neohd.) Krempf. Collected in California.

Mr. E. B. Chamberlain, Cumberland Center, Maine. *Dolichomitra cymbifolia* (Ldbg.) Broth. cfr., and *Venturiella japonica* (Mitt.) Broth. cfr. (= *Erpodium japonicum* Mitt.). Collected in the Province of Kôchi Japan, by Prof. Okamura.

Rev. James Hansen, St. John's University, Collegeville, Minnesota. *Platygyrium repens* (Brid.) B. & S. cfr. Collected Collegeville.

Prof. Thomas A. Bonser, Spokane College, Spokane, Wash. *Pogonatum alpinum* (L.) Roehl., collected British Columbia; *Porella rivularis* (Nees) Trev. Collected Liberty Creek, Wash.

Mr. D. Lewis Dutton, R. F. D. 2, Brandon, Vermont. *Pellia epiphylla* (L.) Corda; *Sphagnum Warnstorffii* Russ. Collected Vermont.